The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

MAILED
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U.S PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte BHARATH RANGARAJAN,
RAMKUMAR SUBRAMANIAN,
KHOI A. PHAN,
URSULA Q. QUINTO AND
MICHAEL K. TEMPLETON

Appeal No. 2006-1188
Application No. 10/000,208

HEARD: May 09, 2006

Before KRATZ, TIMM, and JEFFREY T. SMITH, Administrative Patent Judges.

KRATZ, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's final rejection of claims 1-6 and 8-13.

BACKGROUND

Appellants' invention relates to a system for dispensing resist solution via a nozzle onto a substrate and, alternately, dummy-dispensing[1] resist via the nozzle into a return line. The

[1] See the paragraph bridging pages 2 and 3 of appellants' specification for an explanation of dummy dispensing.

subject dispensing system includes a nozzle movable between a first position for dispensing resist onto a substrate and a second position for dummy dispensing resist into a return line. According to appellants (specification, page 4), their dispensing system mitigates against resist accumulation on the dispense head nozzle, via drying, while allowing for conservation of resist through the use of a return line arrangement designed to conserve resist solution. A further understanding of appellants' invention can be derived from a reading of appealed claim 1, as reproduced below.

1. A system for dispensing resist, comprising:
a reservoir;
a nozzle in fluid communication with the reservoir; and
a return line in fluid communication with the reservoir, the return line has a liquid trap to mitigate fluid evaporation;
wherein the nozzle is moveable between first and second positions to continuously dispense liquid;
in the first position, the nozzle is positioned to dispense liquid from the reservoir onto a substrate; and
in the second position the nozzle is positioned to dummy-dispense liquid from the reservoir into the return line to provide a constant flow of liquid through the nozzle to mitigate residual occlusion accrual in the nozzle.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Tholome	4,785,760	Nov. 22, 1988
Ravishankar	4,803,946	Feb. 14, 1999
Akimoto et al. (Akimoto)	5,938,847	Aug. 17, 1999
Tateyama et al. (Tateyama)	5,965,200	Oct. 12, 1999
Kitano et al. (Kitano)	6,371,667	Apr. 16, 2002[2]

Claims 1, 5, 6, 8, 9 and 11-13 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kitano in view of Tateyama and Ravishankar. Claims 2, 3 and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Kitano in view of Tateyama, Ravishankar and Akimoto. Claim 4 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Kitano in view of Tateyama and Ravishankar and Tholome.

OPINION

We have carefully reviewed the entire record, including all of the arguments and evidence advanced by both the examiner and the appellants in support of their respective positions.[3] This review leads us to conclude that the examiner's rejections are not well founded.

[2] Application filed April 06, 2000.

[3] Appellants complain about an alleged premature final action in the briefs. However, that matter is not an appealable issue that. Therefore, this issue is not us for review.

Under 35 U.S.C. § 103(a), the examiner carries the initial burden of establishing a prima facie case of obviousness. In re Piasecki, 745 F.2d 1468, 1471-72, 223 USPQ 785, 787-88 (Fed. Cir. 1984). As part of meeting this initial burden, the examiner must determine what the differences are between the subject matter of the claims and the prior art and whether those differences "are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art" (emphasis added). 35 U.S.C. § 103(a)(1999); Graham v. John Deere Co., 383 U.S. 1, 14, 148 USPQ 459, 465 (1966). Here, the examiner has not met that burden as argued by appellants in the briefs. Accordingly, we reverse all of the aforementioned rejections. The reasons for our determination follow.

Kitano discloses, inter alia, a reservoir (tank, 61) and a nozzle (N1) in fluid communication therewith for dispensing resist onto a substrate. See drawing figure 1 of Kitano and the specification text corresponding thereto. Kitano teaches that a catch member (90) is arranged to be periodically moved from a waiting position into a position over the substrate but under a position occupied by the moveable nozzle (N1) to receive resist flowing through nozzle (N1) so as to control the start and stop

of resist flow through the nozzle onto a substrate. See drawing figures 24-27 of Kitano and the specification text corresponding thereto. Kitano discloses that the caught resist can be reused. See column 10, lines 48-54 of Kitano.

In rejecting claims 1, 5, 6, 8, 9 and 11-13 under 35 U.S.C. § 103(a), the examiner acknowledges that Kitano does not disclose a return line in fluid communication with a reservoir, including a liquid trap, as recited in appealed claim 1. Thus, the examiner turns to Tateyama and Ravishankar.

According to the examiner (answer, page 4), Tateyama teaches:

> immediately recycling the surplus coating material along with fresh coating material (Figure 2,; column 5, line 65-column 6, line 1), and Ravishankar discloses a draining system (Abstract) that would inherently mitigate fluid evaporation by exposing only a small volume of solvent in the exhaust system (Figure 4, column 3, lines 26-42) by using a p-trap in the drain or return line (column 4, lines 51-52.

The examiner (answer, page 4) continues to explain that:

> it would have been obvious to one of ordinary skill in the art at the time of the invention to connect the return line or storage tank to the reservoir to streamline the process, increase efficiency, and use the resist coating solution as it is needed while operating the apparatus; and it would have been obvious to one of ordinary skill in the art to use a p-trap (a liquid trap) in the return line to minimize exposure of the resist solution (column 3, lines 31-34), thereby minimizing evaporation.

The difficulty we have with the examiner's obviousness position set forth in the rejection is that the examiner has not fairly explained with sufficient particularity the modification to Kitano's dispensing apparatus that the examiner proposes would have been suggested to one of ordinary skill in the art by the combined teachings of the references and how such a modification would result in a system corresponding to appellants' claimed system.

Tateyama, at the portions thereof (column 5, line 65 through column 6, line 11) referred to by the examiner in the rejection, discloses that:

> [t]he recycle processing means 50 comprises an air/liquid separating mechanism 51 for separating the developing solution which is recovered under suction by the suction nozzle 23 into air and liquid and an impurity removing mechanism 52 for removing an impurity in the developing solution. The developing solution recovered under suction by the suction nozzle 23 has its impurity, etc., removed by the recycle processing means 50 and is regenerated to a developing solution of a predetermined concentration. It is, therefore, possible to recycle the solution back to the developing solution supply tube 26 for reuse. As will be appreciated from above, it may be possible to recycle the regenerated developing solution back to the developing solution holding tank 27.

This portion of the disclosure of Tateyama relates to a suction fed recycle system associated with developing apparatus (20). The developing unit (20) is located downstream of resist

applying unit (16) in the direction of LCD substrate travel through the coating and developing system described therein. See drawing figure 1 and the accompanying text of Tateyama. In this regard, resist is applied to a substrate in the resist applying unit (16), not the developing unit (20) of Tateyama.

Here, the examiner has not persuasively articulated why one of ordinary skill in the art would have been led to modify the resist solution supply system, particularly the moving catch member arrangement of Kitano that is used to start and stop the discharge of resist onto a substrate based on those cited developer unit recycle features of Tateyama. For example, the catch member of Kitano is moved into a catch position above the substrate yet below the nozzle to intercept (catch) the resist so that the resist flow to the substrate stops while the resist flow through the nozzle to the catch member continues (dummy dispenses). See, e.g., column 10, lines 20-25 of Kitano. On the other hand, the developer recycle system of Tateyama that is relied on by the examiner is designed for use in a developing unit wherein the flow of developer to the substrate is stopped by stopping the flow through nozzle (22) via a pump (28) and the closing operation of a valve (29). The recycle operations of Tateyama are commenced via the use of a suction nozzle (23) in an

arrangement wherein the suction nozzle does not operate as a catch member to stop flow of developer to a substrate. Nor has the examiner established that problems with respect to developer recycle and dispensing are substantially the same as those related to resist dispensing and recycle. Thus, the examiner's viewpoint (answer, page 8) that one of ordinary skill in the art would look to Tateyama "to see how one would design a recycling system that could be used in the apparatus disclose[d] by Kitano et al to efficiently use coating materials" has not been substantiated with the prior art evidence adduced by the examiner. While Ravishankar discloses a p-trap for use in place of a collection tank in a resist drain system, the latter reference does not cure the deficiencies of the examiner's proposed combination of Kitano and Tateyama vis-à-vis the claimed subject matter at issue here.

Rejections based on § 103(a) must rest on a factual basis with these facts being interpreted without hindsight reconstruction of the invention from the prior art. See In re Warner, 379 F.2d 1011, 1017, 154 USPQ 173, 177 (CCPA 1967), cert. denied, 389 U.S. 1057 (1968). Our reviewing court has repeatedly cautioned against employing hindsight by using the appellants' disclosure as a blueprint to reconstruct the claimed invention

from the isolated teachings of the prior art. See, e.g., Grain Processing Corp. v. American Maize-Products Co., 840 F.2d 902, 907, 5 USPQ2d 1788, 1792 (Fed. Cir. 1988).

From our perspective, the examiner's rejections appear to be premised on impermissible hindsight reasoning. On the record of this appeal, it is our view that the examiner has not carried the burden of establishing a prima facie case of obviousness with respect to the subject matter defined by the appealed claims subject to this ground of rejection.[4]

Since the examiner has not established that any of the additionally applied references in the other separately stated rejections would make up for the above-noted deficiencies in the combined teachings of Kitano, Tateyama and Ravishankar, we do not sustain any of the other stated obviousness rejections.

[4] Independent claim 13 has not been separately addressed by the examiner in the stated rejection. Independent claim 13 includes several means plus function limitations that invoke the sixth paragraph of 35 U.S.C. § 112. Appellants have offered an explanation of the scope of claim 13 at the top of page 3 of the brief that has not been disputed by the examiner. Moreover, the examiner has not explained how the applied prior art would furnish a system corresponding to that required by the structures from appellants' specification invoked by the means plus function limitations of claim 13, or their equivalents, other than that offered for the system of independent claim 1. On this record, we do not find that explanation of the examiner persuasive in discharging the examiner's burden of establishing the obviousness, prima facie, of the subject matter of claim 13.

CONCLUSION

The decision of the examiner to reject claims 1, 5, 6, 8, 9 and 11-13 under 35 U.S.C. § 103(a) as being unpatentable over Kitano in view of Tateyama and Ravishankar; to reject claims 2, 3 and 10 under 35 U.S.C. § 103(a) as being unpatentable over Kitano in view of Tateyama, Ravishankar and Akimoto; and to reject claim 4 under 35 U.S.C. § 103(a) as being unpatentable over Kitano in view of Tateyama and Ravishankar and Tholome is reversed.

REVERSED

PETER F. KRATZ)
Administrative Patent Judge)
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CATHERINE TIMM) BOARD OF PATENT
Administrative Patent Judge) APPEALS
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